hospital. Here at least six sputum tests were performed, and, if negative, a further three examinations of the gastric washings were made; temperature observations, B.S.R., and exercise tolerance tests were also performed. The final disposal was decided by the medical officer in charge of the chest radiography section. Each man was interviewed, together with the medical specialist responsible for the hospital beds, and his future prospects and plans considered before the final recommendation was made.

Broadly speaking, there were three main avenues through which personnel with tuberculous infiltration might pass. First, they might be transferred to an R.A.F. treatment centre; secondly, they might be invalided from the Service and discharged to the care of their local tuberculosis officer; or, thirdly, if the lesion was of a very minor nature they might be retained in the Service in a lower medical category or released if they had this option. Non-tuberculous abnormalities which might require surgical intervention were transferred to the R.A.F. Unit of Thoracic Surgery at Midhurst.

The total number of ex-prisoners-of-war from Germany who passed through this unit was 9,142. Among these the following abnormalities were discovered in their respective age groups (Tables I and II).

TABLE I.—Non-tuberculous Abnormalities

Disease	Age Group (Years)						Total
	20-24	25-29	30-34	35-39	40-44	45 and Over	
Bronchitis and emphysema	0	2	0	0	0	0	2
Bronchitis and emphysema with bronchiectasis	0	1	0	0	0	0	1
Pulmonary fibrosis (non-tuberculous)	4	2	2	2	0	0	10
Congenital abnormalities, pulmonary (azygos vein, lobe, etc.)	6	3	1	0	0	0	10
Congenital abnormalities, non-pulmonary	32	18	6	2	0	0	58
Acquired cardiovascular lesions	1	1	1	0	0	0	3
Thickened pleura	18	15	7	2	1	0	43
Aberrant pneumonic consolidation	9	3	4	1	0	0	17
Shrapnel in chest wall and lung fields	6	6	2	0	0	0	14

It was found that in many cases the aberrant pneumonic consolidations had resolved upon return from leave or did so after a short stay in hospital. Cases of shrapnel in the lung fields were nearly all without symptoms and did not require surgical intervention. Two of these were cases of bullets in the lung fields. All cases were referred to a surgical specialist before the final decision was reached. The numbers of other pathological non-tuberculous abnormalities are small, as might be expected in the relatively youthful age groups examined, and do not call for any special comment.

TABLE II.—Tuberculous Abnormalities Discovered

Age Group:	20-24	25-29	30-34	35-39	40-44	45 and Over	Total
Active pulmonary tuberculosis (sputum-positive)	13	3	3	0	0	0	19
Active pulmonary tuberculosis (sputum-negative)	17	6	5	0	0	0	28
Inactive pulmonary tuberculosis	15	21	25	3	0	0	64
Calcified nodule only	22	23	11	2	1	0	59
Calcified hilar glands	12	6	5	4	0	0	27
Calcified nodule and glands	20	16	10	2	2	1	51

It will be seen that there were 47 cases of active tuberculous infiltration (0.5% of the total x-rayed). This is a considerable increase over the proportion discovered in other surveys, which has remained fairly constant at 0.3% (Evans, 1943; Trail *et al.*, 1944; Dick, 1945). The majority of personnel examined were between the ages of 20 and 34. From the figures it can be seen that 64% of the active infiltrations, both sputum-positive and sputum-negative, were in the 20-24 age group; whereas 44% of the inactive infiltrations, which did not require treatment, were in the 30-34 group. Of the active infiltration cases 41 were transferred to an R.A.F. treatment centre in the north-west of England. As sufficient time has elapsed, these cases have been followed up to find out how they responded to treatment. It will be seen that the number of cases with positive

sputum has increased from 19 to 27; this is accounted for by the fact that further sputum tests are performed on arrival, including sputum culture and culture of the gastric juice for *M. tuberculosis*.

TABLE III.—Summary of the Results of Treatment

Extent of Disease	Sputum-positive	Successful A.P. Induction	Unsuccessful A.P. Induction	Conservative Sanatorium Treatment	Discharge to T.O.
Unilateral (22 cases)	15	9	3	4	6
Bilateral (19 cases)	12*	3	4	7	5

* Add one case in which the pleural fluid was positive (+).

It will be seen that 12 successful artificial pneumothorax inductions were performed out of a total of 19 attempted. In addition 11 cases were well enough to be discharged to the care of their local tuberculosis officer after a further period of observation.

Comment

The figures and results testify to the value of mass radiography. In the active infiltrations the high proportion of sputum-positive cases (57%) shows the urgency for treatment.

It must be borne in mind that a large percentage of aircrew personnel were drawn from middle-class families, and therefore the higher incidence of active phthisis requires some comment.

On questioning the men it was found that the food had been adequate until the last six months, when Red Cross parcels ceased to arrive. Most of the men had been interned for a period ranging from one to four years. One is therefore led to the conclusion that higher incidence of infection may be associated with close living quarters and a lowered resistance—in the first instance due to mental stress and in the later stages actual malnutrition.

The Royal Air Force practice of admitting to hospital for investigation before transfer to a treatment centre might well be employed as a model for civilian mass radiography. If a certain number of general hospital beds were placed at the disposal of the physician in charge of the mass radiography unit for preliminary investigation, this would avoid the stigma of attendance at tuberculosis dispensary and sanatorium, which is bound to be present under the existing nomenclature.

I should like to thank the Director-General of Medical Services in the Royal Air Force for permission to publish this paper; and also Wing Commander C. E. H. Anson and Squadron Leader C. Bremer for their help in compiling the figures.

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GAS GANGRENE OF THE GALL-BLADDER

BY

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Gas gangrene of the gall-bladder is so rarely encountered that a short detail of the circumstances attending this case may not be unacceptable.

Case Report

A man aged 56 was admitted to the Royal Hospital, Wolverhampton, on Jan. 9, 1942, having suffered with severe abdominal pain for three days. The pain was confined to the right hypochondrium. Acute and colicky at the onset, it had suddenly assumed a fearful intensity some twenty hours before admission. He had not vomited. There was no history of previous abdominal pain, indigestion, or jaundice.

On examination the patient, an obese strongly built man, was in great pain and distress. The tongue was dry and furred, temperature 98°F. (36.7°C.), pulse rate 116. Respirations were short, "grunting," and obviously painful. The abdomen was slightly distended and immobile, with extreme tenderness and rigidity in the right hypochondrium. Examination of the heart and lungs was negative, except for poor air entry at the right lung base.

A provisional diagnosis of acute cholecystitis was made, but the possibility of perforated duodenal ulcer was seriously considered. Since, however, immediate operation was obviously necessary, a

skigram of the abdomen was omitted. This proved unfortunate, as an interesting pneumogram of the gall-bladder might have been obtained.

Operation.—Under spinal analgesia the abdomen was opened by a right paramedian incision. The peritoneal cavity contained a considerable quantity of foul-smelling thin brown fluid, quite unlike the usual turbid effusion of spreading peritonitis. The gall-bladder was lightly sealed off by omentum, but on exposure was found to be grossly distended, oedematous, and haemorrhagic, the greater part of the fundus being frankly gangrenous. An attempt to aspirate the contents of the gall-bladder with a syringe yielded nothing but gas, and the distended organ immediately collapsed. Two small stones could be felt in the cystic duct, but below this the duct was healthy and of very small calibre, so that cholecystectomy was easily performed. The common bile duct was apparently normal and was not opened. The wound was closed in the usual way with a drainage-tube to the gall-bladder bed.

On examination the gall-bladder contained practically no fluid. The whole mucous membrane was necrotic, shaggy, and of a dark-brown colour. Two small calculi impacted in the cystic duct sharply limited the inflammatory process. No other stones were present. Cultures of the mucous membrane of the gall-bladder yielded a pure profuse growth of *Cl. welchii*.

Progress.—The patient was given 20,000 units of polyvalent anti-gas-gangrene serum intramuscularly at the close of the operation, and during the first three post-operative days he received a total of 20 g. of sulphapyridine. His condition remained critical for the first few days. The abdomen became very distended, and brown discoloration of the skin, characteristic of clostridial infection, gradually spread from the wound over the anterior abdominal wall. No gangrene developed, however, and both distension and staining gradually subsided. The drainage-tube was shortened after 48 hours and removed at the end of a week. Profuse purulent discharge from the track persisted for several days, after which convalescence was uneventful.

Discussion

It is now well recognized that anaerobic bacilli frequently gain access to the biliary tract. Fulminating gas gangrene of the liver, following cholecystectomy, occasionally provides an unwelcome reminder of their presence. Gordon-Taylor and Whitby (1930), using anaerobic cultures, recovered *Cl. welchii* from the gall-bladder in nearly 9% of a series of 50 consecutive cholecystectomy specimens. They also found the organisms in 13% of the gall-stones obtained post mortem. Nevertheless, gangrenous cholecystitis due to *Cl. welchii* is seldom encountered, and detailed clinical accounts of frankly gangrenous gall-bladders are very rare indeed. Vest (1933), reviewing the role of clostridia in cholecystitis, found only five such cases in the literature. Gordon-Taylor and Whitby mentioned two others, while Simon (1932) reported an interesting case in which the diagnosis was made radiologically before operation, the shadow of the gas-filled gall-bladder being clearly visible.

On the assumption that bacterial infection is the primary factor in cholecystitis and gall-stone formation, discussions of *Cl. welchii* infection in the past have been focused on the question whether these organisms are the primary cause of the disease or mere secondary invaders. But the infective theory of gall-stone formation has recently been challenged, and there is now a growing body of opinion, strongly supported by surgical experience, that bacterial infection of the gall-bladder is nearly always a secondary phenomenon, determined by the effects of gall-stones. This sequence of events is probably true of most cases, but is particularly well shown in acute cholecystitis. This disease usually begins with an attack of gall-stone colic, but, should the stone become firmly impacted, the resulting congestion and oedema of the gall-bladder, together with stasis of its contents, soon prepare the field for infection by intestinal organisms. Such we believe to have been the sequence of events in the case here recorded. The initial obstruction of the gall-bladder by stone, and its subsequent invasion by this grave disease, seem to be clearly reflected in the clinical features of the case.

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Medical Memoranda

A Case of Concurrent Herpes Zoster and Varicella

The following report of a case in an elderly man seems worthy of record.

A well-preserved man aged 70 was admitted on Nov. 20, 1945, with a vesicular eruption limited to the area supplied by the right supraorbital nerve. The early history was vague, but the eruption had appeared on Nov. 17. Some of the vesicles were confluent and rapidly became haemorrhagic. On Nov. 23 he ran a temperature of 99.2° F. (37.3° C.), and next day there appeared a typical varicella eruption of a very discrete type covering the body and limbs. He has never had chickenpox, so far as he knows, nor has he recently been in contact with it or with herpes zoster.

Up to the time of writing the varicella has progressed satisfactorily, there now remaining only a few dried-up vesicles. Unfortunately the herpes zoster became infected, though it is now steadily healing.

Similar cases have been reported. J. J. Manning (1944) attended a man of 63 years with both conditions strictly concurrent, and Rose (1944) a man aged 81, the varicella developing one week after the herpes zoster. In Norman Flower's (1944) case in a man aged 40 varicella followed 11 days later. Dr. Alexander (1944) reports a case similar to my own, the varicella developing some 48 hours later; and Dr. Mary Barrow (1944) records one in which the varicella was some five days in appearing. Lastly, Dr. Simon (1944) reported a case in a man aged 63, with varicella developing five days later.

All the cases referred to were in males in the region of 60 or over, with the exception of Dr. Flower's case. The interval between the development of the herpes zoster and the appearance of the varicella varies from 48 hours to 1 week. In one case only was there a possible history of contact, but the histories in every instance were not complete.

One other case of interest was reported in the same period—namely, that of Dr. Allen (1944), the case being that of a boy aged 5½. Here the varicella preceded the herpetic eruption some three weeks.

I wish to thank Dr. J. Grant, M.O.H., Gateshead, for seeing the case and for permission to publish.

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A Case of Secondary Abdominal Pregnancy

The following case history of a somewhat rare condition may prove of interest.

CASE HISTORY

A rather slim Mongo (Bantu) negress, aged about 30, of average height, was admitted to our bush hospital on Sept. 28, 1945. She had attended three months previously and was diagnosed as being five months pregnant, but no vaginal examination had been made. It was her first pregnancy. She was admitted to the labour ward by the head orderly about midday and said that "pains" had started the previous day. At 5 p.m. the orderly reported the case and said there was no progress. She was seen shortly after that time by me.

On examination the pulse was 112, of fairly good volume, and the patient, though not distressed, seemed to be in pain. There were no contractions. Heart and lungs were normal. The abdomen was enlarged to the size of an eight-months pregnancy. The foetal parts were very superficial and the outline of a bone (probably the right tibia) could be distinctly felt through the abdominal wall above and to the left of the umbilicus. There was a curious "tenseness" about the abdomen—not that associated with uterine contractions, but rather like a large fairly soft ovarian cyst. The child was lying obliquely with the back to the right and the head in the left iliac fossa. No foetal heart sounds could be heard and no souffle. Patient affirmed that there had been quite violent movements during the day. Per vaginam, there was no cervical dilatation and the characteristic softening associated with advanced pregnancy was almost completely absent. There was no haemorrhage or macroscopic discharge. Secondary abdominal pregnancy was suspected.

Operation.—At 6.30 p.m. spinal analgesia (stovaine) was given, supplemented after three-quarters of an hour by open ether. On opening the abdomen by a right paramedian incision the greenish amniotic sac was immediately apparent; it was slightly adherent to the parietes. The sac was incised; the quantity of fluid was rather less than usual. The child, a male, was extracted, and it made a few feeble movements. It weighed 2.3 kg. (just over 5 lb.). The head was flattened from side to side and especially in the right parietal

The Ministry of Education has sent to local education authorities a memorandum (No. 156, May 27, 1946) on the administration of Section 54 of the Education Act, 1944, which deals with power to ensure cleanliness in schools and school-children.